Learning Alliance Highlights

Learning Alliance on Climate Resilient Cities

Week Five

ELLA
Evidence and lessons from Latin America

Based on case studies of Brazilian, Colombian and Bolivian experiences with early warning systems (EWS) for sudden-onset extreme weather events in urban areas, experts from Africa, Latin America and Asia examined how EWS may be enhanced in their cities.

CITY EARLY WARNING SYSTEMS

SUMMARY

In Discussion 5 of the online learning programme, Latin American experiences with early warning systems (EWS) in the cities of Rio de Janeiro, Brazil, Santa Cruz and La Paz, Bolivia, as well as Medellin and San Juan de Pasto, Colombia, were shared with participants. In particular, these cases demonstrate the importance of monitoring technologies, access to information and community involvement in efforts to reduce the impacts of extreme weather events in urban areas.

Experts from Africa, Asia and Latin America discussed existing EWS in their cities as well as the challenges to improving efficiency. On the whole, participants felt that significant improvements could be made to local EWS and that much could be learnt from the Latin American examples. Where formal EWS do not exist, participants felt that a series of informal systems was positively influencing disaster risk reduction in their cities.

Key Conclusions

Online discussions pointed to the following key conclusions related to EWS in Africa, Latin American and Asian cities:

- Investments in city-level monitoring and information dissemination technologies would greatly improve existing EWS
- The practices used in the Latin America EWS, particularly those employed in the city of Rio de Janeiro, were felt to be highly applicable in cities across the three regions
- Poor illiteracy rates, low socio-economic levels and lack of access to technology among high risk populations present challenges to the effectiveness of early warning systems

CONTENT

Discussion: Early Warning Systems in Cities

Learning Focus

The discussion on EWS focused specifically on systems for sudden-onset climate related extreme events in cities. Participants analysed their local reality to see whether the four main characteristics of effective EWS, as defined by the United Nations International Strategy for Disaster Risk Reduction (UNISDR), are present in their cities: risk knowledge, monitoring and warning, dissemination and communication, and response capability. As exemplified in the experiences of Rio de Janeiro (Brazil), Santa Cruz and La Paz (Bolivia), and Medellin and San Juan de Pasto (Colombia), Latin American cities are developing increasingly advanced EWS to manage and reduce disaster risk, improve understanding and increase the capacity of at-risk populations to anticipate and react to extreme events. Participants were encouraged to compare these systems with EWS in their own cities and identify how local EWS might be improved.

Discussion 5 was guided by the following three questions:

1. Does your city have an EWS (formal or informal) in place to reduce climate related risks?
2. How do EWS in your cities work in practice, in terms of the four components outlined by the UNISDR?
3. Do you think that any of the Latin American initiatives might be successfully adapted for implementation in your cities? What might enable or hinder this?

Latin American Case Studies

For this discussion a series of case studies were shared with participants highlighting a variety of EWS for sudden-onset extreme events in five Latin American cities (Rio de Janeiro, Santa Cruz, La Paz, Medellin and San Juan de Pasto). No specific interviews were carried out in conjunction with this discussions, however the following key materials were provided:

- Landslide Risk Reduction in Rio de Janeiro
- EWS in Rio de Janeiro
- EWS in Cities in Bolivia and Colombia

Discussion Participation

Thirteen countries were represented in this discussion, with contributions from 33 participants in total. South Asia and Sub-Saharan Africa were the most highly represented regions.

Summary

The majority of participants explained that comprehensive EWS are yet to be developed in their cities. Nonetheless, most felt that to some extent each of the four key components of EWS (risk knowledge, monitoring and warning, dissemination and communication, and response capability) had been mobilised in their cities, albeit in an uncoordinated manner. Participants from the cities of Chennai (India), Cape Town (South Africa), Dhaka (Bangladesh) and Montevideo (Uruguay) shared information about formal EWS, which were felt to be effective and comparable to the Latin American case studies shared by the Moderator.

> *"The City of Cape Town has quite a formal EWS that is linked to the National Disaster Management Centre... In practice the information that feeds into this EWS is sourced from the South African Weather Service network of observation sensors stationed around the country... The South African Weather Service also offers alerts regarding the forecast weather conditions, for the public to be informed and prepared. A number of electronic warnings are generated by the City's Disaster Risk Management Centre including press releases to media houses and electronic variable signage on major transit routes within the city."*
>
> *-Stefan Raubenheimer, South Africa Civil Society*

Many participants shared information about the existence of national EWS, but explained that significant challenges exist in terms of the accuracy of these warnings at the city level. Given the population density in urban centres, participants agreed that local EWS are essential, and, as demonstrated by the Latin American examples, felt that local monitoring technology would make a great difference by increasing lead-times for action. Most participants confirmed that the monitoring component of EWS, namely weather projections, is carried out by a national meteorological department.

> *"Unlike the cities discussed in the course readings which have their own weather, flood and other risk monitoring and warning capabilities, Kampala relies on the national meteorological monitoring and information systems for weather information which is based on global models- which of course provide only rough data (for country scale predictions) which are susceptible to wide margins of error."*
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> *- Godfrey Oluka, Uganda Government Official*

Participants stated that information on impending extreme weather events is generally disseminated via the media (television, radio and newspapers). In emergency situations, sirens, loud speakers and telephones are used to initiate evacuations across all regions. In the cities that have developed comprehensive EWS, participants mentioned that complementary forms of technology have been employed to improve outreach. In Montevideo, for example, text messages are sent to community members in the most vulnerable areas when disasters are approaching, and in Dhaka an Interactive Voice Response System has been set up to provide up-to-date warning messages.

Many participants believed that awareness levels could be improved by integrating the use of radios, mobile phones and internet into city level EWS communications. However, it was clear from the online discussion that these strategies ought to be adopted based on local circumstances. For example, participants from Ghana indicated that the mobile phone market throughout the country is saturated, thus the use of text messaging to warn the public of impending extreme weather events might prove to be very effective. In other countries where much of the population is without mobile phone services, the radio or other methods of community communication may be more appropriate. Participants also stressed that it is extremely important to be aware of local norms before opting for specific communication and alert technologies.

> *"I think the example of Bolivia could be contextually relevant to Mozambique, particularly the use of radio, which is the most accessible device (means) for the poor have to access reliable information. One of the potential problems I foresee with the radio (device) is tied to its perceived value to the male chief of the household. Men often have radios as a "male-made" and "male-deserving souvenir", and take them with them wherever they go. They walk with it while the women and children are left at home without the possibility of hearing any alerts made on radio."*
>
> *- Tito Bonde, Mozambique*
> *Disaster Risk Management Expert*

In most cases, participants felt that communication and dissemination of information about risks and emergency protocols is severely lacking, thus jeopardising response capacity. Vulnerable populations are often left uninformed and unprepared – particularly those in informal settlements who do not have regular access to televisions, mobile phones, or where illiteracy rates are high.

In light of such challenges, participants felt that the community based training similar to that offered by the Civil Defence in Rio de Janeiro would be highly beneficial for high risk populations in their respective cities (for more information see ELLA Brief: Rio de Janeiro City's Early Warning System for Heavy Rain).

Major challenges to improving EWS, as identified by the participants, include harnessing government commitment and funding (in particular for modern monitoring technology), strengthening coordination between actors and building local capacity.

Supplementary Materials

Participants were provided with the following resources in preparation for this discussion:

- Early Warning Practices can Save Lives (ISDR)
- Landslide Risk Reduction Measures by the Rio de Janeiro City Government
- ELLA Brief: Rio de Janeiro City's Early Warning System for Heavy Rain

Key Lessons

- Comprehensive city level EWS for sudden-onset extreme events do exist in Africa, Asia and Latin America, albeit in relatively few areas. In general, it was felt that all four facets of effective EWS could be improved upon and much could be learnt from the Latin American experiences.
- Investments in city level monitoring and information dissemination technologies would help to significant reduce the negative impacts of extreme events, by allowing greater lead-times to prepared communities
- In order to communicate effectively with vulnerable communities, local conditions need to be taken into account, such as access to certain technologies and the ability to understand messages and act upon them

CONTACT SSN

To learn more about the Learning Alliance on Climate Resilient Cities, or any of the specific themes raised in the Learning Alliance Highlights, contact the author and Learning Alliance moderator, Charlotte Olivia Heffer, ELLA Brazil Project Coordinator at the Environmental Laboratory at the Federal University of Rio de Janeiro (UFRJ), at charlotte@lima.coppe.ufrj.br.

FIND OUT MORE FROM ELLA

To learn more about climate change, disaster risk management and governance in Latin America's cities, visit the ELLA website, which has a full list of the knowledge materials available on these topics. To learn more about other development issues, browse other ELLA Themes.

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